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REMARKS

Applicant thanks the Examiner for waiving Rule 1.121 regarding the form of the claim 1 amendment that Applicant presented in the previous response to an office action.

Claims 2, 3 and 5 stand objected to but would be allowable if each claim included all the limitations of the base claim and any intervening claims.

Claims 1, 16-57 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. It is asserted by the Examiner that new matter is found in claim 1 by the limitations "characterized by a strong strontium/rubidium separation factor greater than 12,500 at an alkaline pH." The examiner has not found support for whole limitation noted above and has not found a definition of separation factors in the specifications. The Examiner further finds that the limitations of each of claims 16-57 are new matter. The Examiner has requested that Applicant point out specific references in the Specification in support for each of the claims.

Regarding the issues concerning claim 1, the Examiner notes that the definition of the separation factor as used in claim 1 could not be found on page 12 of the Specification as Applicant stated in the response to the Office Action dated April 2, 2003. Applicant's identification of page 12 as the location of the definition was a typographical error. The correct location of the definition is page 15 of the Specification.

Beginning at line 27 of page 15, Applicant discloses that "separation factors for the strontium/rubidium selectivity were also calculated by dividing the strontium K_d by the rubidium K_d . The use of this formula to calculate separation factors is illustrated numerous times in Table 5 located on pages 15 and 16. In all instances shown in Table 5, the separation factor is the strontium distribution coefficient K_d divided by the rubidium distribution coefficient K_d . Applicant discloses the definition of a distribution coefficient on page 9 of the Specification. Accordingly, Applicant asserts that the specification provides a complete definition of "a strontium/rubidium separation factor", and that this limitation does not present new matter.

The term "alkaline" is used numerous times throughout the specification including page 4,

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lines 16, 22 and 23; page 6, line 1; page 9 at the second full paragraph, line 4; page 11 at the first full paragraph, line 4; and in original claims 2, 3, 9, and 15. Although the Specification does not provide specific definition of the term "alkaline," Applicant asserts that the definition of "alkaline" is well known by one having ordinary skill in the art and that Applicant used the term in its ordinary and customary sense. Alkaline is defined in the McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition, as "having a pH greater than 7." Therefore, Applicant respectfully asserts that the term "alkaline" in the amended claim 1 is not new matter.

The examples provided in the Specification further provide that the strontium and rubidium K_d values are obtained at the same pH value. In Example 5 of the Specification, Applicant discloses how a molybdate target solution was prepared and neutralized with sodium hydroxide to a pH of approximately 12.3. (Specification, page 15, lines 21-30). First, molybdenum powder was dissolved in hydrogen peroxide to produce a clear yellow solution of molybdic acid. *Id.* Solid NaOH was added to increase the pH to 12.3. *Id.* The colorless solution was then filtered and spiked with either rubidium 86 or strontium 89 and " K_d values determined as described previously." *Id.* Applicant then discloses, as discussed *supra*, that "separation factors for the strontium/rubidium selectivity were also calculated by dividing the strontium K_d by the rubidium K_d , thus allowing the relative affinities of the ion exchange materials to be directly compared. *Id.* Accordingly, Applicant respectfully asserts that the Specification supports that a separation factor for a given material is determined at the pH that the individual strontium K_d and rubidium K_d values are determined. Therefore, Applicant respectfully asserts that the reference to a separation factor at an alkaline pH is not new matter.

In Applicant's response dated July 29, 2003, the applicant acknowledged that the specification does not expressly state a separation factor "greater than 12,500". However, an inventor may excise the prior art from the claim and still satisfy the written description requirements of Section 112, first paragraph. Citing *in re Johnson*, 558 F.2d 1008, 194 U.S.P.Q. 187 (C.C.P.A. 1977). The Examiner has not taken issue with this principle of the law, and Applicant therefore maintains that this limitation similarly does not introduce new matter.

Therefore, for the reasons stated above, Applicant respectfully asserts that the amendment to claim 1 does not introduce new matter and is fully supported by the Specification as noted above. Reconsideration and withdrawal of the rejection of claim 1 is respectfully requested.

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Concerning claims 16-57, the Examiner has requested specific cites to the Specification showing support for the claims. Applicant provides the following table that includes the citations to the Specification where the limitations find adequate support.

Claim Language	Citation to the Specification	"From the Specification"
Claims 16-57		
16. The rubidium-82 generator of claim 1, further comprising strontium-82 absorbed on the sodium nonatitanate.	p. 4, line 16	... and then absorbing the strontium-82 from the solution onto a support comprising sodium nonatitanate.
17. The rubidium-82 generator of claim 1, further comprising a sodium nonatitanate filter medium disposed to receive effluent from the strontium-82 support medium to trap strontium-82 leached from the generator.	p. 7, lines 1-4	Although the sodium nonatitanate may be used as a direct replacement for hydrous tin dioxide in the 82Rb generator, it is also possible to use sodium nonatitanate in the form of a disposable add-on filter that could be used to trap any 82Sr that is leached from the generator during the production of 82Rb
18. The rubidium-82 generator of claim 1, further comprising a column, wherein the sodium nonatitanate is disposed in the column.	p. 7, lines 5-6	The first step in preparing a 82Rb generator is to load the parent 82Sr onto the sodium nonatitanate material and place the ion exchange material into a suitable column.
19. The rubidium-82 generator of claim 1, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than 59,200.	Claims 4 and 5	4. The rubidium-82 generator of claim 1, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than 1,000. 5. The rubidium-82 generator of claim 1, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than 100,000.
20. The rubidium-82 generator of claim 1, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than or equal to 79,500.	Page 16, table 5	NaTi (200°C, 21hr) 954,000 12 79,500
21. The process of claim 6, wherein the aqueous sodium hydroxide is about 50 wt% sodium hydroxide.	Page 7, Example 1, lines 1-2	Sodium nonatitanate (NaTi) was synthesized hydrothermally as follows. 77.5 g of titanium isopropoxide was added to 84.35 g of a 50 wt.% solution of NaOH with vigorous stirring. ...
22. The process of claim 6, further comprising: filtering the sodium	Page 7, Example 1, line 6	After the allotted time, the materials were filtered, washed with ethanol to remove

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nonatitanate from the solution.		residual base and dried at 60°C.
23. The process of claim 22, further comprising: washing the sodium nonatitanate with ethanol.	Page 7, Example 1, line 6	After the allotted time, the materials were filtered, washed with ethanol to remove residual base and dried at 60°C.
24. The process of claim 23, further comprising: drying the sodium nonatitanate.	Page 8, line 1	After the allotted time, the materials were filtered, washed with ethanol to remove residual base and dried at 60°C.
25. The process of claim 6, wherein the molar ratio of aqueous sodium hydroxide to titanium isopropoxide is between 1 and 10.	Claims 7 and 8	7. The process of claim 6, wherein the molar ratio of aqueous sodium hydroxide to titanium isopropoxide is in excess of 0.44. 8. The process of claim 6, wherein the molar ratio of aqueous sodium hydroxide to titanium isopropoxide is between 2 and 6.
26. The process of claim 6, wherein the sodium nonatitanate is heated in a pressure vessel.	page 7, Example, 1, lines 3-5.	The resultant gel was heated at approximately 108°C for 3 hours, transferred to a hydrothermal pressure vessel with an additional 90 mL of deionized water.
27. The process of claim 6, wherein the sodium nonatitanate is prepared in the absence of chlorides and sulfates.	Page 7, lines 12-18.	Alternative titanium salts that could be used to manufacture sodium nonatitanate include titanium tetrachloride, $TiCl_4$, and titanium sulfate, $TiOSO_4 \cdot xH_2SO_4 \cdot yH_2O$. However, hydrolysis of these salts leads to the generation of hydrochloric acid and sulfuric acid, respectively, and thus additional base is required during the hydrothermal process. The final product also needed to be exhaustively washed to remove residual sodium chloride or sodium sulfate. Consequently, titanium isopropoxide (which hydrolyzes to form propanol) is the preferred starting material because the final product is free from additional sodium salts.
28. The method of claim 9, wherein the molybdenum target is dissolved in hydrogen peroxide.	p. 14, line 1	Dissolve the irradiated molybdenum target in 30% hydrogen peroxide, ensuring excess hydrogen peroxide is destroyed
29. The method of claim 9, wherein the pH is adjusted with sodium hydroxide.	Page 14, line 3	Add sodium hydroxide to bring the pH to approximately 12.
30. The method of claim 9, wherein the pH is adjusted to about 12.	Page 14, line 3	Add sodium hydroxide to bring the pH to approximately 12.
31. The method of claim 9, further comprising: stripping the strontium-82 from the sodium nonatitanate.	Page 14, lines 11-12	The column can then be stripped using dilute mineral acid to recover the ^{82}Sr and the sodium nonatitanate reused or discarded
32. The method of claim 31, wherein the strontium-82 is stripped from the sodium	Page 14, lines 11-12	As above.

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nonatitanate with mineral acid.		
33. The method of claim 9, further comprising: washing the sodium nonatitanate with a buffer solution.	Page 14, last paragraph, lines 2-6	Both targets are processed following standard processing procedures to generate rubidium chloride solutions in an ammonia/ammonium chloride buffer solution. These solutions are then passed through a sodium nonatitanate column and washed with additional buffer to remove any weakly held rubidium cations.
34. The method of claim 9, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than 10,000.	Page 16	Table 5
35. The method of claim 9, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than 12,500.	Page 16	Table 5
36. The method of claim 9, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than or equal to 59,200.	Page 16	Table 5
37. The method of claim 9, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than or equal to 100,000.	Page 16	Table 5
38. The process of claim 10, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than 10,000.	Page 16	Table 5
39. The rubidium-82 generator of claim 10, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than 12,500.	Page 16	Table 5
40. The rubidium-82 generator of claim 10, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than or equal to 59,200.	Page 16	Table 5
41. The rubidium-82 generator of claim 10, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than or equal to 100,000.	Page 16	Table 5

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43. The process of claim 10, further comprising: disposing the sodium nonatitanate support medium into a column.	Page 7, lines 5-6.	The first step in preparing a ⁸² Rb generator is to load the parent ⁸² Sr onto the sodium nonatitanate material and place the ion exchange material into a suitable column
44. The process of claim 10, wherein the solvent containing the eluted rubidium is alkaline.	Page 11, paragraph 1, lines 4-5.	The pH of the final solutions was generally alkaline for the nonatitanates (NaTi) and titanosilicates, with pH values as high as 12 being measured
45. The process of claim 10, further comprising: buffering the solvent.	Page 11, paragraph 1, lines 7-8.	This effect can be overcome, if desired, by buffering the solution.
47. The method of claim 15, wherein the dissolved target solution includes a buffer.	Page 17, Example 7, lines 2-4.	In essence, ⁸² Sr needs to be selectively extracted from a solution of RbCl in a 0.1 M NH ₃ / 0.1M NH ₄ Cl buffer adjusted to a pH of between 9 and 10.
48. The method of claim 47, wherein the buffer is an ammonia/ammonium chloride buffer.	Page 17, Example 7, lines 2-4.	As above
49. The method of claim 47, wherein the pH is between 9 and 10.	Page 17, Example 7, lines 2-4.	As above
50. The method of claim 15, wherein the pH is greater than 10.	p. 18, Example 8, last paragraph coupled with Page 17, Example 7, lines 2-4.	The performance could also be improved by removing the buffer and increasing the pH to improve the amounts of strontium absorbed.
51. The method of claim 15, further comprising: stripping the strontium-82 from the sodium nonatitanate.	Page 29, Example 11, lines 1-2.	Strontium was quantitatively eluted from the sodium nonatitanate column of Example 10 using 6M nitric acid.
52. The method of claim 51, wherein the strontium-82 is stripped from the sodium nonatitanate with mineral acid.	Page 6, lines 4-5.	absorbed ions readily stripped by treatment with dilute mineral acid allowing the sodium nonatitanate to be recycled, if desired
53. The method of claim 15, further comprising: washing the sodium nonatitanate with a buffer solution.	Page 17, lines 18-21.	Consequently, absorption of rubidium during the processing of rubidium and rubidium chloride targets will be minimal, and any rubidium absorbed will be readily removed by washing with additional 0.1 M NH ₃ / 0.1M NH ₄ Cl buffer solution.
54. The process of claim 15, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than 10,000.	Page 16	Table 5
55. The rubidium-82 generator of claim 15, wherein the sodium nonatitanate is characterized by strontium/rubidium separation factor greater than 12,500.	Page 16	Table 5

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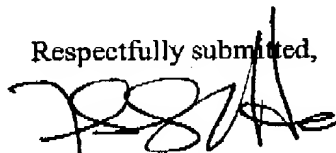
56. The rubidium-82 generator of claim 15, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than or equal to 59,200.	Page 16	Table 5
57. The rubidium-82 generator of claim 15, wherein the sodium nonatitanate is characterized by a strontium/rubidium separation factor greater than or equal to 100,000.	Page 16	Table 5

Claims 34-37 and 46 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended claims 34-37 to provide the missing antecedent basis for each of the claims and has cancelled claim 46. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 42 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Lehto, et al., "The Ion Exchange of strontium on sodium titanate..." or Taylor '583 or Grant '567 or Yano, "Essentials of a Rubidium-82 Generator for Nuclear Medicine." Applicant has cancelled claim 42.

In the event there are additional charges in connection with the filing of this Response, the Commissioner is hereby authorized to charge the Deposit Account No. 50-0714/LYNN/0119 of the firm of the below-signed attorney in the amount of any necessary fee.

Respectfully submitted,



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